

ITEM 203.81 CONTROLLED LOW STRENGTH MATERIAL

DESCRIPTION

The work shall consist of furnishing and placing a Control Backfill Material in accordance with these specifications and in reasonable close conformity with the lines, grades, thicknesses and cross sections shown on the plans or established by the ENGINEER.

Control Backfill Material will meet the requirements of either Option A or Option B below:

OPTION A: MATERIALS

The materials used shall meet the requirements of the following subsections:

Portland Cement, Type 1 or Type 2	701-01
Concrete Sand	703-07
Admixtures	711-08
Water	712-01
Fly Ash	As follows:

Fly ash shall be a finely divided active pozzolan, resulting from the combustion of ground or powdered coal, that will combine with the calcium hydroxide of hydrating portland cement. The fly ash will meet the following requirements:

Fineness: (ASTM C430)	
Amount retained when wet-sieved on	
No. 325 sieve, maximum %	34.0
Pozzolanic Activity Index (ASTM C618)	5500 kPa
With lime at 7 days, min. pressure	

The CONTRACTOR shall certify that the fly ash has been tested and meets the requirements of the specifications.

OPTION A: CONSTRUCTION DETAILS

The backfill material shall be proportioned as follows:

<u>Material</u>	<u>Parts by solid volume</u>
Portland Cement	1
Fly Ash	3
Sand	14
Water	As required

The backfill material shall contain at least 4% entrained air. Water shall be added to achieve the desired consistency.

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The ENGINEER may allow manufacture of backfill material at the grouting site if suitable means of production are available. Suitable means of production shall include a grout mixer capable of maintaining a continuous supply of grout to the pump and a suitable means of providing proper batch proportions.

Volumetric batch boxes or weighing of materials may be used. A water meter reading in liters to 2.0 liters shall be installed in the water system to permit a dependable method of measuring and controlling the amount of water in the mix.

Material that is not manufactured at the grout site will be batched, mixed and transported in accordance with Section 501-3 unless otherwise specified on the plans or in the proposal, except that automatic proportioning and recording of batches shall not be required. Fly ash shall be stored in a separate bin or silo and shall be incorporated into the weighing system in a manner similar to that of cement. The batching delivery tolerance of fly ash shall be the same as that of cement.

The backfill material shall be accepted on the basis of inspection and approval by the ENGINEER.

This material shall be placed at a 230 mm minimum slump.

The method of placing the backfill material shall be as approved by the ENGINEER.

OPTION B: MATERIALS

Materials shall meet the requirements of the following subsections:

Portland Cement, Type 1 or Type 2	701-01
Concrete Sand	703-07
Coarse Aggregate	703-02
Admixtures	711-08
Water	712-01

Mix proportions shall be as follows:

Material	1 Cubic Meter Batch
Cement (kg)	135
Water (kg)	280
Sand % of Total Aggregate (Solid volume)	85
Coarse Aggregate Gradation	CA1
Air Content	Minimum 4%
Water reducing Admixtures, Type A (Normal)	550-750g/c.m. (See Note 1)

NOTE 1: Changes from this dosage range to be approved by the ENGINEER in charge.

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OPTION B: CONSTRUCTION DETAILS

Control Backfill Material shall be manufactured, mixed and transported in accordance with requirements of Section 501-3 except that automatic proportioning and recording of batches shall not be required. Control Backfill Material may be manufactured at the placement site provided that suitable means of production are available as determined by the ENGINEER. Equipment shall as a minimum be capable of maintaining a continuous supply of material and have suitable means of providing proper batch proportions.

This material shall be placed at a 230 mm minimum slump.

No loads shall be applied to the material in place prior to its developing sufficient strength to prevent deformation.

METHOD OF MEASUREMENT (OPTION A OR B)

The quantity to be paid for under this item shall be the number of cubic meters of material computed in its final position within the payment lines shown on the plans or otherwise ordered in writing by the ENGINEER. No deduction will be made for the volume occupied by pipes or conduits 150 mm or less in nominal inside diameter. No deduction will be made for the cross-sectional area of an existing facility.

BASIS OF PAYMENT (OPTION A OR B)

The unit price bid per cubic meter shall include the cost of furnishing all labor, materials and equipment necessary to complete the work.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
203.81M	Control Backfill Material	CM